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Are we facing a noncommunicable disease pandemic?

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Abstract The global boom in premature mortality and morbidity from noncommunicable diseases (NCDs) shares many similarities with pandemics of infectious diseases, yet public health professionals have resisted the adoption of this label. It is increasingly apparent that NCDs are actually communicable conditions, and although the vectors of disease are nontraditional, the pandemic label is apt. Arguing for a change in terminology extends beyond pedantry as the move carries serious implications for the public health community and the general public. Additional resources are unlocked once a disease reaches pandemic proportions and, as a long-neglected and underfunded group of conditions, NCDs desperately require a renewed sense of focus and political attention. This paper provides objections, definitions, and advantages to approaching the leading cause of global death through an alternative lens. A novel framework for managing NCDs is presented with reference to the traditional influenza pandemic response.

Contents

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1. Noncommunicable diseases

Noncommunicable diseases (NCDs) are a group of conditions that include cardiovascular disease, chronic respiratory diseases, cancers, diabetes, and mental illness. Six of the top 10 leading causes of death in 2012 were NCDs, including the top three (ischemic heart disease, stroke, and chronic obstructive pulmonary disease). The latter two have unseated lung infections and diarrheal diseases from the top 10 since 1990. Over the same period the number of deaths from NCDs has increased from 27 million to 38 million, currently representing 70% of all global mortality [1]. Once confined to a clutch of high-income countries, NCDs are now the leading cause of death in developed and developing countries alike.

The rapid rise of morbidity and mortality from NCDs has not been accompanied by the usual scramble to raise resources and quash spread across international borders. A high-level political meeting on NCDs in 2011 was years in the making and had a limited impact on the level of financial support for prevention and control activities. According to Global Burden of Disease data, NCDs cause 28 times more deaths than human immunodeficiency virus, but receive 17 times less funding [1]. The comparison with Ebola, Zika, severe acute respiratory syndrome, and H1N1 is even more damning.

2. Definitions

With classical infectious diseases, such as influenza, the disease is always present in the population but at a relatively low level. Nonzero baseline prevalence is termed the ''endemic'' level-the expected amount of the disease in a given population in a given geographical area. Persistent and high levels of disease occurrence are referred to as ''hyperendemic''. The term ''epidemic'' applies to a situation where the level of disease in a community rises above expected levels, especially if there is a sudden increase. The term ''pandemic'' is used when an epidemic crosses continents and affects a large number of people [2].

The main objection to appropriating the term pandemic is that NCDs are noninfectious-critics contend that it would be oxymoronic to suggest otherwise. Although NCDs do not act as classical infectious diseases, their name is an unhelpful misnomer that belies significant environmental and person-to-person transmission underlying their global dissemination. It could also be argued that the wavelength of the outbreak has been too protracted to represent a classical epidemic, and that the high global prevalence is in keeping with ''expected'' levels when we consider Omran's [3] epidemiological transition, i.e., NCDs may be hyperendemic, but they are not pandemic. We will examine each objection in turn.

3. NCDs as infectious diseases

The dominant NCD narrative has been that these conditions are caused solely by individual lifestyle choices, famously ''gluttony and sloth'' [4]. In recent years, it has become apparent that social, political, and economic trends (including national economic performance, urbanization, population aging, globalization, and the increasing marketing, affordability, and availability of unhealthy products) are the most significant drivers of the NCD boom, rather than a sudden uptick in human laziness [5]. These external drivers operate by increasing exposure to various ''vectors of disease'' including ultraprocessed food and drink, alcohol, tobacco products, and wider social and environmental changes that limit physical activity [6]. These vectors are embedded within complex commercial, political, and social systems.

Research from a range of fields supports the position that NCDs are not entirely self-inflicted: many NCDs can be passed from person to person either through viral transmission, as with liver and cervical cancer [7,8], or through social networks, the built environment, social and economic conditions, and intergenerational transmission [9–13]. Even though NCDs do not meet the criteria for classical infectious diseases, recognition of the significant overlap has led to trusted public health agencies (such as the US Centers for Disease Control and Prevention) and sources used by the general population (such as Wikipedia, the public's web-based arbitrator of reality) to concede that we are experiencing ''epidemics'' of obesity and diabetes [14–16].

4. Temporal profile

The second objection is that the NCD boom is representative of major societal shifts rather than a temporally delineated disease outbreak, more akin to irrevocably rising sea levels than an isolated

Table 1 World Health Organization (WHO) pandemic phase descriptors and main actions by phase for influenza[a] with suggested noncommunicable disease (NCD) parallel.

Phase	Classical description	Suggested NCD descriptors	Main actors				
			Planning and coordination	Main actors	Communications	Reducing the spread of disease	Continuity of health care provision
1–3	Animal-to-human transmission causes small clusters of disease in people	Socioeconomic/physical environment becomes increasingly conducive: Increasing availability and desirability of commercial vectors of disease	Develop, exercise, and periodically revise national pandemic preparedness and response plans	Develop robust national surveillance systems in collaboration with relevant sectors	Complete communications planning and initiate communications activities to communicate real and potential risks	Promote beneficial behaviors in individuals for self-protection. Plan for use of pharmaceuticals and vaccines	Prepare the health system to scale up
4	Human-to-human transmission sufficient to sustain community-level outbreaks	Environment is sufficiently pathogenic to establish NCDs as the leading cause of DALYs and premature death at a community level	Direct and coordinate rapid pandemic containment activities in collaboration with WHO to limit or delay spread	Increase surveillance. Monitor containment operations. Share findings with WHO and the international community	Promote and communicate recommended interventions to prevent and reduce population and individual risk	Implement rapid pandemic containment operations and other activities; collaborate with WHO and the international community	Activate contingency plans
5	Sustained community-level outbreaks in ⩾2 countries in the same WHO region	Sustained community-level outbreaks in ⩾2 countries in the same WHO region	Provide leadership and coordination to multisectoral resources to mitigate the societal and economic impacts	Actively monitor and assess the evolving pandemic and its impacts and mitigation measures	Continue providing updates to the general public and all stakeholders on the state of pandemic and measures to mitigate risk	Implement individual, societal, and pharmaceutical measures	Implement contingency plans for health systems at all levels
6	Sustained community-level outbreaks in ⩾1 other country in another WHO region	Sustained community-level outbreaks in ⩾1 other country in another WHO region					
Post peak period	Levels of pandemic disease in most countries with adequate surveillance have dropped below peak levels	Levels of premature mortality 1/3 lower than peak in countries with adequate surveillance SDG target 3.4	Plan and coordinate for additional resources and capacities during possible future waves	Continue surveillance to detect subsequent waves	Regularly update the public and other stakeholders on any changes to the status of the pandemic	Evaluate the effectiveness of the measures used to update guidelines, protocols, and algorithms	Rest, restock resources, revise plans, and rebuild essential services
Postpandemic period	Levels of disease activity have returned to baseline levels in most countries with adequate surveillance	Morbidity and mortality confined to later life (>70 y) in countries with adequate surveillance	Review lessons learned and share experiences with the international community. Replenish resources	Evaluate the pandemic characteristics and situation monitoring and assessment tools for the next pandemic and other public health emergencies	Publicly acknowledge contributions of all communities and sectors and communicate the lessons learned; incorporate lessons learned into communications activities and planning for the next public health crisis	Conduct thorough evaluation of all interventions implemented	Evaluate the response of the health system to the pandemic and share lessons learned

DALY = Disability Adjusted Life Year; SDG = Sustainable Development Goal.

[a] Available at: http://www.who.int/influenza/resources/documents/pandemic_phase_descriptions_and_actions.pdf.

tidal wave. NCDs have been developing for decades and are driven by globalization, market liberalization, economic development, and population aging. These ostensibly unidirectional trends increase host susceptibility and foster the commercial availability and cultural desirability of pathogenic commodities. NCDs are not going away any time soon, and their relative share of global deaths will continue to increase in the face of falling mortality from injuries, childbirth, and infectious disease.

The NCD pandemic rubric only operates in reference to avoidable NCD mortality and morbidity. In 2012, 16 million individuals died from NCDs before reaching their 70th birthday, predominantly in the developing world [17]. The majority of these deaths are preventable. Although the time line is stretched, the rise of preventable NCD mortality is macrocosmic in displaying all the usual features of a traditional pandemic with a greater level of complexity, played out on a much larger scale.

5. Hyperendemic versus pandemic

The rise of preventable NCD mortality is more significant than the overall rise of NCDs, because the former is preventable and reversible. It is hard to say what the baseline/expected levels of NCD mortality ought to be; however normative bodies, such as the World Health Organization, consistently call for a situation where premature suffering is completely eliminated [17]. NCD control rhetoric supports the adoption of language that frames premature suffering as an ''out of the ordinary'' surge, rather than accepting the status quo. If we accept that high levels of preventable mortality can be reduced, then ''pandemic'' is the more appropriate label.

6. An untapped seam

There is much to gain from viewing the rise of preventable NCD mortality and morbidity as a pandemic. This perspective engenders an expectation that the burden of disease can and will be curtailed if sufficient resources are brought to bear upon the major drivers. It emphasizes the centrality of international coordination, and of systematic attempts to neutralize adverse environmental conditions. The current emphasis on individual ''healthy choices'' is exposed as a farcical distraction, and efforts to develop and implement necessary health protection measures are accelerated. Application of the traditional World Health Organization pandemic response protocol to the NCD boom (Table 1) highlights gaping holes in the contemporary global response. Health system planning, effective public communication, and comprehensive NCD prevention and control measures appear conspicuously absent when contrasted with this simple summary of best practices.

With the NCD pandemic model, early phases (1—3) are defined by an increasing prevalence of environmental drivers of disease and a growing share of premature NCD morbidity and mortality. Phase 4 mirrors sustained community-level outbreaks of infectious disease; at this stage, environmental conditions are such that NCDs are the leading cause of disability adjusted life years (DALYs) and death under 70 years. Phases 5 and 6 use identical definitions to the influenza model. The post peak period is reached when Sustainable Development Goal Target 3.4 is met, a one third reduction in premature NCD mortality [18]. The postpandemic phase will arise when premature NCD mortality and morbidity is confined to later life. The activities recommended for responding to an influenza pandemic (under the heading Main actors) should be applied to the NCD pandemic verbatim.

7. Conclusion

NCDs are not classical infectious diseases, but neither are they noncommunicable. While the term pandemic will never be a perfect fit, there is a good argument for a pragmatic adoption of the term. Wittgenstein [19] argued that words act as tools and meaning is found in use. In the face of NCDs, the global health community needs to leverage every tool at its disposal. Embracing the term ''pandemic'' may feel uncomfortable to epidemiological purists, but this lens affords valuable new perspectives on an intractable problem.

A review by Green and colleagues [20] found that the term ''epidemic'' is used in many different ways in the scientific literature, and that the general population generally understands the term to imply ''danger to the public and a very large number of victims''. It is time to drop the pedantry and mine this rich seam for new insights and resources to help rid the world of preventable suffering from NCDs.

Conflicts of interest

None declared.

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